S/057/61/031/012/008/013 B104/B112

AUTHORS:

Valitov, R. A., Kukush, V. D., Orlov, V. G.

TITLE:

Experiment on direct conversion of the energy of an electromagnetic superhigh-frequency field into kinetic energy

PERIODICAI: Zhurnal tekhnicheskoy fiziki, v. 31, no. 12, 1961, 1462-1466

TEXT: P. N. Lebedev was the first to demonstrate that the pressure of light (energy of an electromagnetic field) can be converted into potential energy (Izbrannyye proizvedeniya. Pod redaktsii A. K. Timiryazeva. Izd. tekhniko-teoreticheskoy literaturi, 1949). An attempt has now been made to convert the energy of a superhigh-frequency field into kinetic energy by utilizing the pondermotive forces acting upon a well conducting plate placed across a waveguide. For a circular traveling waveguide, in which a test specimen may move in a circle, the following equation of motion of the specimen is obtained:

 $I\frac{d^{2}\alpha}{dt^{2}} + A\frac{d\alpha}{dt} + M_{fir} = M_{p}, \text{ where I is the moment of inertia of the moving }$ Card 1/4>

Experiment on direct conversion... S/057/61/031/012/008/013 B104/B112

system, α the angle of rotation, A a proportionality factor relating the moment produced by the aerodynamic resistance to the angular velocity, Mfr the moment of frictional forces, and M the moment of pondermotive forces. With the solutions of this system the expected speeds of a real $M_p = 35 \cdot 10^{-3}$ dyne om is obtained for a power input system are estimated. of 40 w, an amplification factor of the traveling wave resonator of $N^2 = 10$, a reflection factor |Q| = 0.5 of the specimen, a $\lambda/\lambda_{\rm W}$ ratio of 0.75 (λ is the wavelength in free space and λ_{w} that in the waveguide), and a mean radius of 3.5 cm of the circular waveguide. $M_{fr} = 8.0 \cdot 10^{-5}$ dyne cm is obtained for a coefficient of friction of 0.13 and a mass of the moving system of 50 mg. A is estimated by an empirical formula as being 0.245 dyne·cm·sec/rad. Thus, $\omega = 142 \cdot 10^{-3}$ rad/sec (n = 1.36 rpm). A device used for checking these results is described. It consists of a magnetron generator (1) (Fig. 1), an attenuator (2), a pondermotive wattmeter (3), a traveling wave resonator (4) with a moving system, a directional coupler (5), a detection section (6), and a load (7). The Card 2/42

S/057/61/031/012/008/013 B104/B112

Experiment on direct conversion ...

moving system is a centrally supported pivoting arm with metal disks at the end. With a power input of 40 w and an amplification factor of 3, the disks placed at a distance equivalent to five half-wave lengths nad a period of 47 sec. The acceleration time of the system was 10 sec. The period could be reduced to 15 sec using filaments instead of disks. The low efficiency of energy conversion (about 10-9%) is attributed to losses on the waveguide walls. V. G. Mikhaylik participated in the experiments. There are 4 figures and 6 references: 4 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: A. L. Cullen, Proc. IEE, 99, IV, 45 - 50, 1952; F. I. Tischler. IRE, 5, 51, 1957.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. A. Gor'kogo

(Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: December 12, 1960

Card 3/42

ACCESSION NR: AR3000176

S/0274/63/000/004/A067/A068

SCHIRCE: RZh. Radiotekhnika i elektrosvyazi, Abs. 4A427

AUTHOR: Kukush, V. D.; Mikhaylik, V. T.; Orlov, V. G.

TITLE: Increasing the sensitivity of a ponderomotive wattmater by means of a waveguide circuit of a traveling-wave resonator

CITED SOURCE: Uch zap. Khar'kovsk. un.-t. Tr. Radiofiz. fik., v. 121, no. 5, 1962, 126-18

TOPIC TAGS: ponderomotive PIM-10 Wattmeter; traveling-wave resonator; sensitivity increase

TRANSLATION: The wattmeter is included in the loop of traveling-wave resonator (R) connected with the principal channel over which the metered supershighfrequency power is transmitted. Maximum increase of sensitivity depends only on losses in R, and can be made sufficiently great.

Card 1/2

ACCESSION NR1 . AR30001	.76 °			
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VALITOV, R.A.; KUKUSH, V.D.; ORLOV, V.G.

Ponderomotive power meter. Izm.tekh. no.7:32-37 Jl '62. (MIRA 15:6)
(Frequency measurements)

ACCESSION NR: AR4023751 S/0274/64/000/001/A056/A056

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Abs. 1A357

AUTHOR: Orlov, V. G.; Kukush, V. D.

TITLE: Ponderomotive forces acting on a body in a waveguide

CITED SOURCE: Uch. zap. Khar'kovsk. un-t. v. 132, 1962, Tr. Radio-fiz. fak, v. 7, 112-121

TOPIC TAGS: ponderomotive force, waveguide, Helmholz energy method, network theory, normalized susceptance, reflection coefficient, standing wave ratio

TRANSLATION: The ponderomotive forces acting on a well conducting body placed in a waveguide with an unmatched load are investigated theoretically and experimentally. The Helmholz energy method along with network-theory formulas are used to calculate the resultant

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ACCESSION NR: AR4023751

force acting on a plate mounted transversely to a rectangular waveguide operating in the H₁₀ mode. The magnitude of the force depends not only on the incident power and on the normalized susceptance introduced by the body in the waveguide, but also on the reflection coefficient of the load and on the distance between the body and the load. For a definite distance and a short-circuited load, the resultant force can reverse sign. The appearance of an attractive force is due to the accumulation of energy because of multiple reflections between the body and the load, so that the amplitude of the wave which propagates from the load in the resonator turns out to be many times larger than the amplitude of the waves propagating from the generator. Experimental investigations of the dependence of the force on the length of the line between the disc and the load for fixed load SWR and disc susceptances were made with a metallic disc 0.02 mm thick at a frequency 9175 Mc. The experimental data agreed qualitatively and quantitatively with the theoretical results. The data obtained can be used for the development of new measuring

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AR4023764 ACCESSION NR:

RZh. Radiotekhnika i elektrosvyaz', Abs. 1A506

SOURCE: AUTHOR: Valitov, R. A.; Kukush, V. D.; Orlov, V. G.

TITLE: Ponderomotive power measuring instrument

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 132, 1962, Tr. Radio-

fiz. fak., v. 7, 176-190

TOPIC TAGS: ponderomotive power meter, ponderomotive wattmeter, electric wattmeter errors, mechanical wattmeter errors, capacitive susceptance, microwave wattmeter

TRANSLATION: Two silver rectangular plates spaced $\lambda_{\rm b}/4$ apart are

glued to a rigid quartz rod in a vertical waveguide section. mirror is glued to the same rod. The rotation angle is indicated by a light beam reflected from the mirror onto a scale.

ACCESSION NR: AR4023764

tion of the ponderomotive wattmeter is by two means: electric and mechanical. The electric calibration coefficient $K_{\rm e}$ determines the connection between the power and the rotation angle, and depends on the frequency:

$$K_{e} \sim [1 - (\lambda_{0}/\lambda_{cr})^{2}]^{1/2}$$
.

In the case of mechanical calibration, one determines experimentally the per-unit torque of the suspension filament $K_{\underline{m}}$:

$$P = \frac{K}{K} \Delta \theta.$$

To compensate for the capacitive susceptance of the plates, inductive posts were placed in the waveguide. The VSWR at $\theta=45^\circ$, in the 3.1--3.3 cm range, is then ≤ 1.12 . The main error of the ponderomotive wattmeter is determined by the calibration error and by the

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ACCESSION NR: AR4023764

angle-measurement error. Theoretically $(\Delta P/P)_{\rm max} = 3.4\%$. A comparison with a precision calorimetric instrument at 9380 Mc at a VSWR equal to 1.05 yielded $\Delta P/P = 1.2\%$. The readings of several wattmeters differed by $\leq 0.5\%$. V. R.

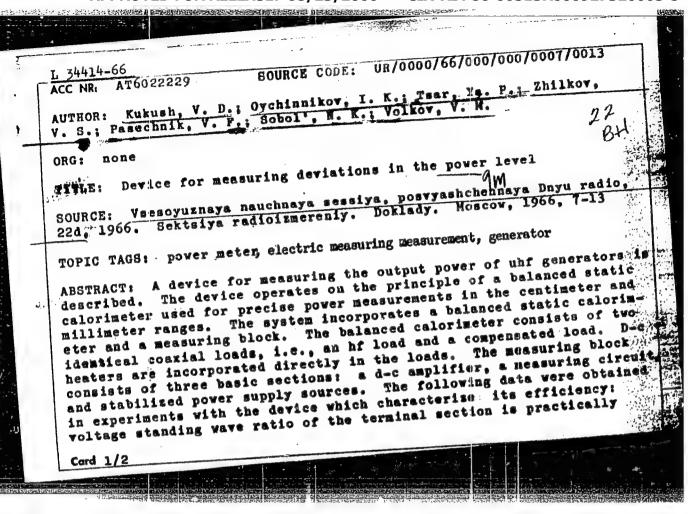
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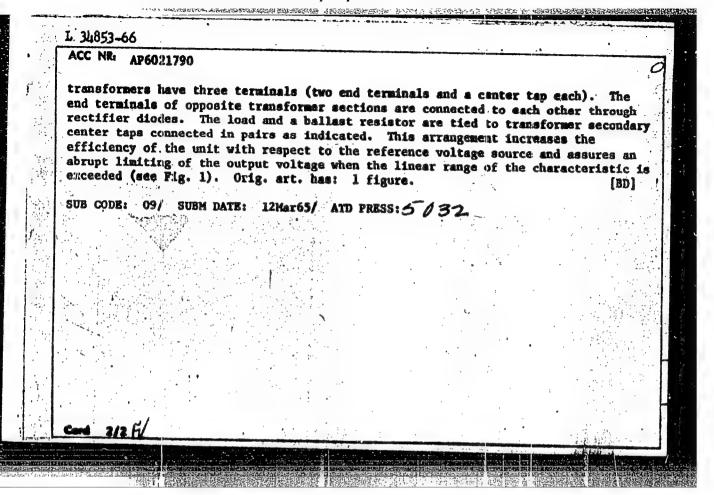
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SUB CODE: GE, SD

ENCL: 00

Card 3/3





S/019/60/000/015/093/143/XX A152/A026

AUTHORS: Kukush, Yu.M., and Shibayev, A.T.

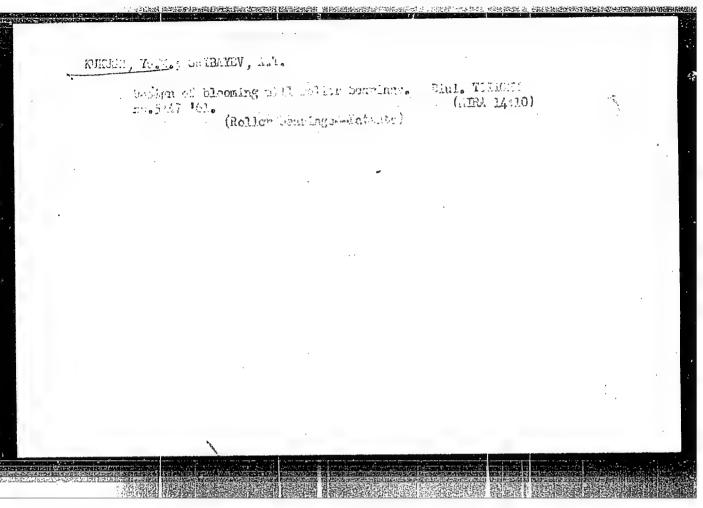
TITLE: Bed-Phate Rollers on Ball-and-Socket Bearing

PERIODICAL: Byulleten' izobreteniy, 1960, No. 15, p. 20

TEXT: Class 7a, 2203. No. 130474 (627086/22 of March 6, 1959). For the purpose of increasing rolling mill output and stability of supports, the latter incorporate ball-and-socket bearings in combination with conical sleeves and intermediate cylindrical bushings, which take up radial and axial loads and absorb shocks from ejected ingot.

A CONTROL CONTROL DE LA CONTRO

Card 1/1



KYUL'OVSKIY, Petko, ingh.; KUKUSHEY, Khristo, ingh.

Determining the optimum dimensions of a transformer. Elektrichestvo no.3:43-48 Mr '60. (MIRA 13:6)

1. Hauchno-issledovatel'skiy institut mashinostroyeniya i elektropromyshlennosti, Sofiya. (Electric transformers)

KUKUSHEV, Khr., inzh.; SAVOY, G., inzh.

Strengtaening of the section of the yoke in the low-powered mantle type transformers. Mashinostroene 12 no.3:10-16 Mr*63

XIULOVSKI, P. ingh.; GEMOV, St. ingh.; KUKUSHEV, Khr. ingh.

The effect of the prices of basic materials on determining the size of oil transformers. Mashinostroone 10 no.11:30-34 '61.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927320003-5"

Optimum dimensioning of the low-power transferomers with core-type magnetic circuit. Mashinostroene 13 no.11:26-32 N '64.

1. Scier'ific Research Institute for the Design, Development, and Manufacture in Electric Industries.

KUKUSHEV, SHT.

What will you be interested in about the organization of machine-tractor stations in Bulgaria.

p. 531 (MECHANISACE ZEMEDELSTVI) Vol. 7, no. 21, Nov. 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 3, March 1958

KUKUSHEVA, A. P.

Packing for Shipment

Efficient cutting of wrapping fabrics. Tekst. prom., 12, No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

: BULGARIA COUNTRY Chemical Tochnology. Chemical Products and SATEGORY Their Toes. Part 2. Coramics. Glass. Binding 1960, No. 1957 : RZEhim., No. 1 ABS. JOUR. Simeonov, K.; Kukusheva, H. RUTTUR TMGT. : Improved Gracklo-Hesistant Glades for White TITLE Faience Tiles ORIG. FUE. : Loka prom-st, 1959, 8, No 3, 25-28 : A new glaze which ensures the complete absence ABS'TRACT of erackles on the dull edge and a good white color for white faience tiles (WFT) was discovered. Its composition by weight is: frit !
No 30 minimum 20, borax 13.3, Na-feldspar 20.2, silica sand 20.9, marblo 3.3, Australian Ersion 13.3; to 100 parts by weight of frit are added Materials. Concrete. Glass 1/3 CARD

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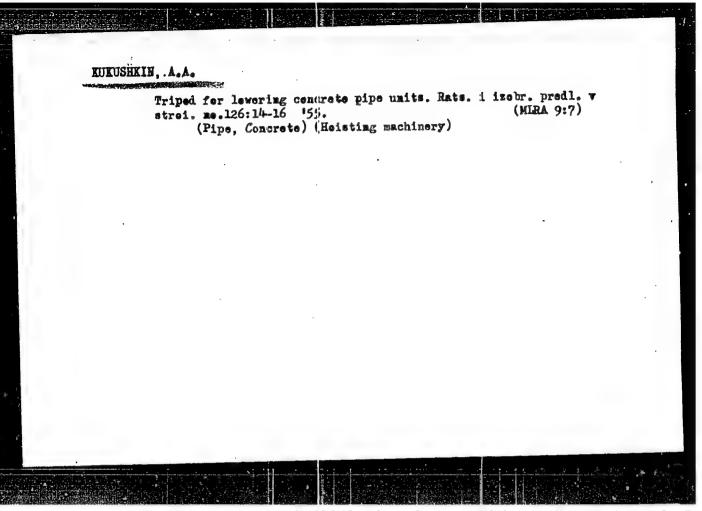
AUTHOR :
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TITLE :

ORIG. PUB. :

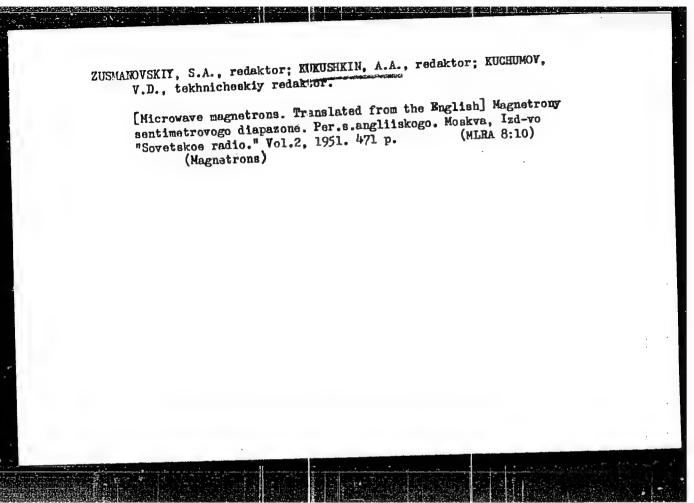
ABSTRACT: 6 parts by weight of kaolin + 0.8 parts by
weight of NgSOh + 0.15 parts by weight of Codecolorizor. The improved glazo provides, besides, an economy of the imported rew materials,
viz.: borax by 5.5% and ZrSiOh by 4.7%. The
temperature of the baking of WFT with improved
glaze should be 1300-1400; at a lower temperature of baking, in order to obtain a better
whiteness of WFT, it is necessary to add to

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927320003-5"

ITSKHOKI, Takov Semenovich; KUKUSHKIN, A.A., redaktor; KOHUZEV, N.M.,
tekhnicheskiy redakter.

[Non-linear radio engineering] Nelineinaia radiotekhnika. Moskva,
Izd-vo "Sovetskoe radio,"1955. 507 p. (MLRA 9:1)

(Radio)

KUKUSHKIN, A. D. Docent

"A Method for Extensive Abdominal Surgery in Connection with Cancer of the Gervix as Modified by the Author," Akusher i Ginekol., No.4, 1949.

Obstetric. & Gynecol. Clinic, Kuban Med. Inst.

SUDAKOV, S.G.; ALEKSANDROV, T.F.; BULANOV, A.I.; DURNEV, A.I.;

YELISEYEV, S.V.; ZAKATOV, P.S.; IZOTOV, A.A.; KARLOV, G.M.;

KUZ'MIN, B.S.; KUKUSHKIN, A.D.; KOLUPAYEV, A.P.; KUZLOVA, Ye.A.;

LARIN, B.A.; LARIN, D.A.; LARIN, B.A.; LITVINOV, B.A.; MAZAYEV,

A.V.; PELLINEN, L.P.; PETROV, A.I.; SOLOV'YEV, A.I.; TOMILIN, A.F.;

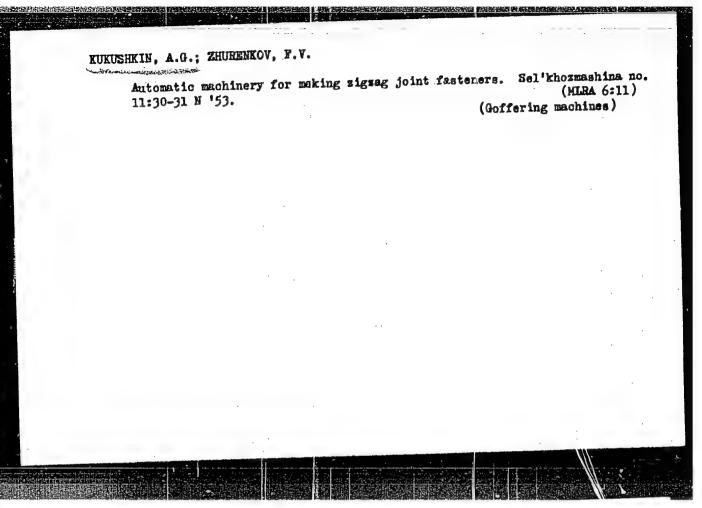
URALOV, S.S.; USPENSKIY, M.S.; FOMIN, M.P.; SHISHKIN, V.N.; SHCHEGLOV,

A.P.; SUPAKOV, S.G., otv. red.; KOMAHKOVA, L.M., red. izd-vs; SUNGUROV,

V.S., tekhn. red.

[Instruction concerning the building-up of a state geodetic network in the U.S.S.R.] Instruktsiia o postroenii gosudarstvennoi geodezicheskoi seti Soiuza SSR; obiazatel na dlia vsekh vedomstv i uchrezhdenii, proizvodiashchikh gosudarstvennye geodezicheskie seti. Moskva, Izd-vo geodez. lit-ry, 1961. 459 p. (MIRA 15:6)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye geodezii i kartografii. (Geodesy)



SHIRNOV, Yu.D.; KUKUSHKIN, A.I.

Relationship between the mute strata of the Baskkir anticlinorium and those in the zones of the Ural-Tau. Mat.VSFGEI.Ob.ser. no.28; (MIRA 14:6)
9-18 '60.

(Baskkiria-Geology, Stratigraphic)

KUKUSHKIN, A.I.; KOGAN, Ia.M.; iMIRNOY-SERGEYEY, A.M.; HEVARTSMAN, D.A.

Operating methods of determining expected production costs. Tekst.
prom. 14 no.6:15-17 Je 154.

(Textile industry-Costs)

(Textile industry-Costs)

SHVARTSMAN, David Aronovich; POLYAK, T.B., retsenzent; KUKUNKIN, A.L., red.; ARKHAHGKL'SKII, S.S., red. [deceased]; MKDVEDEV, L.Ia., tekhn.red.

[Organization of rhythmic work in the cotton spinning and weaving industry] Organizatella ritmichnoi raboty v khlopchato-bumashnom priadil 'no-tkatakom proisvodatwe. Pod red. A.I.Kukushkina. bumashnom priadil 'no-tkatakom proisvodatwe. Pod red. A.I.Kukushkina. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po legkoi prom., 1959. 174 p. (Cotton memufacture)

(Cotton memufacture)

IOFFE, Iosif Grigor'yevich, dotsent, kand.ekonom.nauk; MAYZLIN, L.A., dotsent, kand.ekonom.nauk; KUKUSHKIN, A.I., retsenzent; MOLCHANOV, M.S., retsenzent; GOLUBKV, M.M., red.; KOGAN, V.V., tekhn.red.

[Economics of the textile industry] Ekonomika tekstil'noi promyshlennosti. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po legkoi promyshl., 1959. 394 p. (MIRA 12:12)

1. Zaveduyushchiy kafedroy ekonomiki i organizatsii proizvodstva Leningradskogo tekstil nogo instituta imeni S.M.Kirova (for Kukushkin). 2. Gosplan RSFSR (for Molchanov). (Tex:ile industry)

KUKUSHKIN, A. I.

Kukushkin, A. I, Perodovoy opyt proizvoitsva teploizolatsionnykh rabot v neftyanoy promyshlennosti Advanced Experience in Thermoinsulation Work in the Dil Industry/ (From the series "Opyt meftyanilov-stroiteley" ("Experience of Oil-" eld Construction Workers"), Gostekhizdat, 3 sheets, illustrated. 1753 67,

the brochure describes advanced experience of stakhanovite thermoinsulation workers,

and describes in detail the organization of various steps of insulation work, new mechanisms, and rational methods of carrying out individual operations.

he brochure in intended for foremen and technical engineering workers of constructionassembly organizations and enterprises encaged in thermoinsulation work.

SO: U-6472, 12 Nov 1/54

PHASE I BOOK EXPLOITATION 671

Kukushkin, Aleksandr Ivanovich; Bcykov, Aleksandr Geogriyevich; Ivanov, Anatoliy Nikolayevich

Teploizolyatsionnyye raboty (Heat Insulation) Moscow, Gostoptekhizdat, 1958. 254 p. 6,000 copies printed.

Ed.: Losev, B. 8.; Executive Ed.; Martynova, M. P.; Tech. Ed.: Fedotova, I. G.

PURPOSE: This book is intended for foremen, and engineering and technical personnel of concerns dealing with heat insulating problems.

COVERAGE: This book provides general information in popular form on heat insulation and the exploitation of heat insulating materials, manufacture of these materials, and appropriate equipment. The authors outline principles of heat transfer and classify the equipment for heating and refrigerating. The capital invested for heat insulating equipment should be recovered by its exploitation within one year. Efficiency of proper heat insulating equipment varies from 85 to 95 percent. Resonable usage of one ton of insulating

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Heat Insulation

material leads to the economy of 200 tons of rated fuel per year. During the prewar period the Soviet industry manufactured large quantities of friable heat insulating products such as "ASBOTERMIT", "HOVOASBOZURIT", "ASBOSLIUDA" and others. Mastic heat-insulating construction parts were based on the above-mentioned materials. There are two serious disadvantages connected with application of mastic heat-insulating constructional parts, namely: necessity of preheating the equipment to be insulated and the labor involved being 2 to 5 times more than in the case when large formed heat-insulating parts are used. After the war the use of mastic heat-insulating construction parts was sharply reduced and production of slag wool was rapidly developed. This material is more economical and suitable for refrigeration and heat insulation up to +600°C. The book mentions that at the present there is no wide choice of heat insulating materials that can be used in construction processes. Nevertheless, production of heat-insulating raw materials and ready-made products develops rapidly.

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Card 2/4

VOLCHEN, I.Z., kand. tekhn. nauk; KUKUSHKIN, A.I.; ZINOV, I.I.

Improving methods for producing vulcanite. Stroi. mat. 5 no.10:14-18
0 '59. (MIRA 13:2)

1.Glavnyy inshener tresta Montazhtermoizdeliya (for Kukushkin)
2.Glavnyy inshener Inzenskogo diatomovogo kombinata (for Zinov).

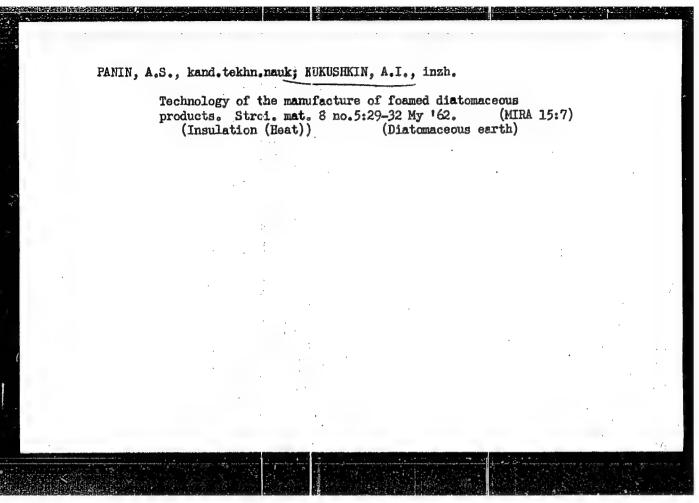
(Rubber)

BOROZNIN, A.A.; BLOKH, E.L.; ROMINOV, G.I.; KHRENOV, G.S.; KUKUSHKIN,
A.I., inzh., red.; TARAYEVA, Ye.K., red.izd-va; MOCHALINA,
Z.S., tekhn. red.

[Economic effectiveness of the introduction of new techniques in heat insulating operations] Ekonomicheskaia effektivnost' vnedreniia novoi tekhniki v proizvodstvo teploizoliatsionnykh rabot; opyt tresta Stroitermoizoliatsiia. Moskva, Gosstroiizdat, 1962.

86 p. (MIRA 16:2)

(Insulation (Heat))—Technological innovations)



KUKUSHKIN, A.M.; BELEVTSEVA, V.S.

Condensation and dehydration of residue from the clarification of neutralized sewage. Ochis. stoch. vod. no.3:64-71 '62. (MIRA 16:5) (Sewage sludge)

MAKSIMOV, V.P., podpolkovník meditsinskoy solshby; KUKUSHKIN, A.M.,
mayor meditsinskoyulushby

Novocsina in skin diseases, Voen, med. zhur. no.12:73 D '56.
(NOVOCAINE) (SKIN-DISEASES) (MIRA 10:3)

	diagnostic valu	ie. Vest	dermai vena	n in epidermophytos 34 no.3:27-29 My-J	160.
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ACCESSION NR: AT4042607 AUTHOR: Bezhanov, B. N.; Kukushi Lu, A. F. S.	. 41 249-65 EWP(k)/EWT(d)/EWP(h)	/EWA(d	/EWP(1)/EWP(v) Pf-4 8/2563/64/000/233/0059/0068
TITLE: The determination of pre sure I saes in the elements of it distributing devices and the channels of pneumatic hammers up sure I satisfy. SOURCE: Leningrad. Politekhnic leskiy natitut. Trudy, no. 233, 1984. Aytomatizatsiya tekhnologiya mashinose coyeniy manufacturing processes), 59-68 TOPIC TAGS: hydraulic device, pneumatic hammer, pressure loss, hydrodynamics, hydrodynamic flow, hydrodynamic loss ABSTRACT: Data concerning hydraulic loss are needed for more complete and correct systems. In conjunction with the hammers, the authors investigated the perimentally and theoretically perimentally and theoretically in pressure losses within pneumatic systems. The authors investigated the perimentally and theoretically see Mo it is buril nyye pneumaticheskiye tipa PR 30L hodu i eksplustatsii. SNKh Leningradia 20 otki buril nyye pneumaticheskiye tipa PR 30L hodu i eksplustatsii. SNKh Leningradia 20 otki buril nyye pneumaticheskiye tipa PR 30L hodu i eksplustatsii. SNKh Leningradia 20 otki buril nyye pneumaticheskiye tipa PR 30L hodu i eksplustatsii. SNKh Leningradia 20 otki buril nyye pneumaticheskiye tipa PR 30L hodu i eksplustatsii. SNKh Leningradia 20 otki buril nyye pneumaticheskiye tipa PR 30L hodu i eksplustatsii. SNKh Leningradia 20 otki buril nyye pneumaticheskiye tipa PR 30L hodu i eksplustatsii.	urruop. Bazhandy B. N. I Kukushi	to, A.	2.7 8+/ 1
SOURCE: Leningrad. Politekhnic leskly natitut. Trudy, no. 233, 1984. Aytomaticative at siya fitekhnologiya mashimoat royeniy (Automation and technology of machinery manufactiring processes), 59-68 TOPIC TACS: hydraulic device, phydrodynamic flow, hydrodynamic flow, hydrodynamic flow, hydrodynamic loss ABSTRACT: Data concerning hydraulic loss ABSTRACT: Data concerning hydraulic loss are needed for more complete and correct calculations and design of new hydraulic systems. In conjunction with the "Pnew matika" factory, which produces pneumatic systems, the authors investigated the matika" factory, which produces pneumatic matika" factory. Which produces pneumatic matika" factory, which produces pneumatic matika" factory which produces pneu	nymyr. The determination of pre	sure l	saes in the elements of air distributing
TOPIC TACS: hydraulic device, pheumatic hammer, pressure loss, hydrodynamics, hydrodynamic flow, hydrodynamic loss. ABSTRACT: Data concerning hydraulic large needed for more complete and correct calculations and design of new hydraulic transported for more complete and correct systems. In conjunction with the "Pnew matika" factory, which produces pneumatic hammers, the authors investigated the lammer drills PR-30, PR-18, and PR-25 elementally and theoretically is perimentally	SOURCE: Leningrad. Politekhnic zatsiya fi tekhnologiya mashindat manufactiring processes), 59-68	eskiy coyeniy	nstitut. Trudy, no. 233, 1984. Avtomati- (Automation and technology of machinery
ABSTRACT: Data concerning hydraulic id sees within pneumatic systems and mechanisms are needed for more complete and correct calculations and design of new hydraulic transported calculations	morte TACS: hydraulic device, p	neumati Ioss	C hammer, pressure loss, hydrodynamics,
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ions (as a function of air confiair velocity and consumption or the stationary air flow. ables. Orig. art. has: 12 fe	n were a Results	I determined from a lire presented in the	Rernoulli-type equation form of graphs and
ASSOCIATION: Leningradskiy po ingrad polytechnic institute)	Ltekhni	heskly lastitut imen	i W. I. Kalinina <u>(Len-</u>
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J. R1600-66 ENT(1)/EEC(L)-2/ENA(h) SOURCE CODE: UR/2563/65/000/250/0034/0040

AUTHOR: Kukushkin, A.P.; Yelimeleki, I.M.

ORG: Leningrad Polytechnic Institute im. M.I. Kalinin (Leningradskiy politekhnicheskiy institut)

TITLE: The calculation of filling time of pneumatic systems with small working volumes

SOURCE: Leningrad. Politekhricheskiy institut. Trudy, no. 250, 1965. Avtomatizatsiya i tekhnologiya mashinostroyeniyi (Autoriation and technology of machinery manufacture), 34-40

TOPIC TAGS: pneumatic device, approximation calculation

ABSTRACT: The customary evaluation of the filling time of a pneumatic system consisting of a distributor valve, working cylinder, and connecting air piping is carried out usually by simply adding the volume of the piping to the subpiston volume and thus establishing an overall "dead volume." However, this assumption which simplifies the calculation to a considerable degree but disregards local resistances is justifiable only when the volume of the piping is small compared to the subpiston region. Experiments using a methodology described earlier (B.N. Bezhanov, A.P. Kukushkina, Trudy LPI No 233, Avtomatizatsiya i tekhnologiya mashinostroyeniya, 1964, pp 59-68) showed that while the filling time with an added resistance near the end of the air pipe was close to the time without such a resistance, the filling time with the same added resistance at the input to the pipe increased

Card 1/2

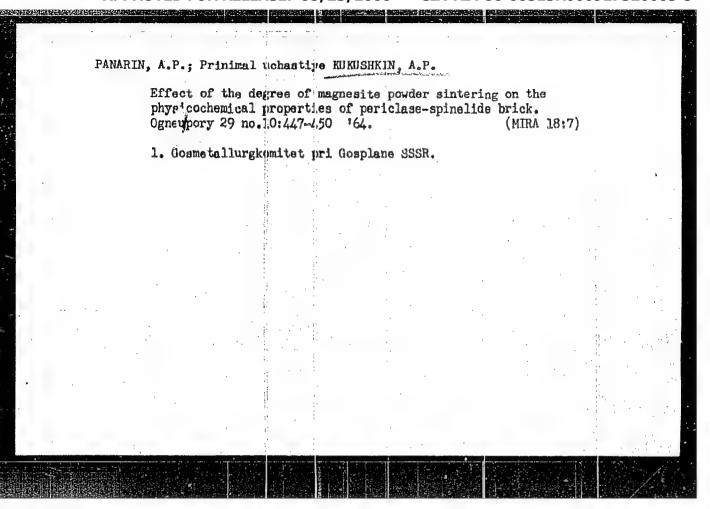
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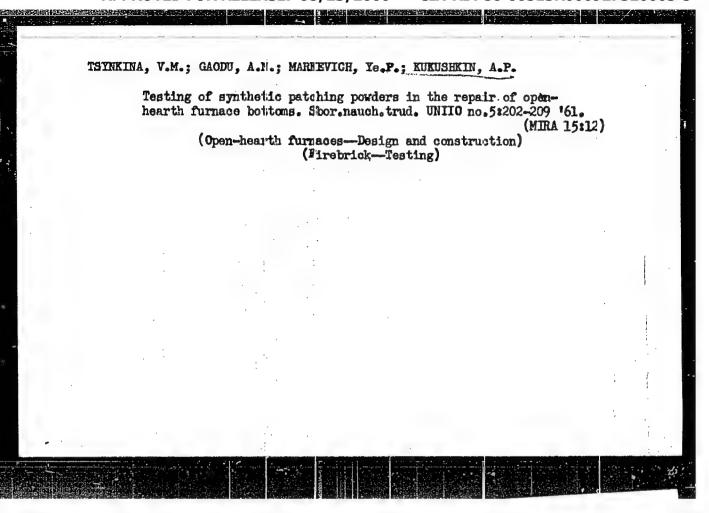
by a factor filling time	of 1.5. Consequent	ly, the presenting	nt authors dev	eloped a new n	nethod of	
	calculation by spliting a varying degree					8
respectivel	t the errors were of y. Orig. art. has:	1) formulas a	oog and 20% i ind 3 figures.	or the two theo	retical method	8,
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KUKUSHKIN, A. P.

"A vapor-oil pump for automatic evacuation pumping." Min Higher Education USSR. Leningrad Polytechnis Inst imeni M. I. Kalinin. Leningrad, 1955. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya letopis No. 16, 1956





SOV/170-59-5-7/18

10(2)

AUTHOR:

Kukushkin, A.V.

TITLE:

A New Method for Determination of Coefficients of Substance Transfer From a Single Experiment (Novyy metod opredeleniya koeffitsiyentov perenosa veshchestva iz odnogo opyta)

PERIODICAL:

Inzhenerno-fizicheekiy zhurnal, 1959, Nr 5, pp 46-54 (USSR)

ABSTRACT:

The author proposes a new method for determination of coefficients of substance transfer for solid and loose materials, based on the analytical solution of the problem on mass exchange between an unbounded plate and a semi-bounded medium. The proposed method meets the following main requirements: 1. A single experiment suffices to determine all characteristics of the transfer of substance (moisture); 2. The material under study does not undergo any alterations (cutting, etc); 3. Experimentation is rather simple, and devices suggested can operate under industrial and field conditions. In the first part of his paper the author formulates mathematically the problem by writing down a system of differential equations with partial derivatives of mass-exchange potentials with respect to time and one spatial coordinate x. Taking into account the boundary conditions the author solves the

Card 1/3

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A New Method for Datermination of Coefficients of Substance Transfer From a Single Experiment

system by means of Laplace's transformation method. As a result of solution, the formulae for the following characteristics of substance transfer: a (mass-exchange coefficient of potential conductivity); L (coefficient of mass conductivity) and c (specific isothermal mass capacitance). In the second part of the fic isothermal mass capacitance). In the second part of the paper the author describes two devices suggested by him for experimental determination of the above characteristics. One of them, pictures in Figure 2, should be used for solid materials, and the other one, pictures in Figure 3, for loose materials. The devices contain pickups designed by Vishnevskiy. The mode of operation of these devices and experimentation technique are described. In the third part of the paper the author proposes a method of carrying out experiments, and in conclusion cites the final results of determination of moisture transfer characteristics for olay from the Nizhniye Kotly (Moscow) deposit.

Card 2/3

A New Method for Determination of Coefficients of Substance Transfer From a

There are 2 diagrams, 1 graph and 2 Soviet references.

ASSOCIATION: Energeticheskiy institut imeni V.I. Lenina (Fower Engineering Institute imeni V.I. Lenin), Ivanovo.

Card 3/3

S/170/60/003/02/18/026 B008/B005

AUTHOR:

Kukushkin, A. V.

TITLE:

A New Method of Determining the Coefficients of Mass Transfer

PERIODICAL:

Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 2,

pp. 90-93

TEXT: The author slightly modifies the theory put forward in Ref. 2 with respect to a new method of determining the mass transfer coefficients by one single experiment. A sample is taken to determine the initial moisture of the material U_0 investigated. As the quantities a_e^i , c_e^i , h_e^i , and h_e^i for the

standard material are known, the coefficient of the potential conductivity (potentsialoprovodnost!) of the material investigated a! can be found from the diagram (Fig. 2). The expression

 $\lambda^{i} = \lambda_{e}^{i} K_{e}^{i} / \frac{a^{i}}{a_{e}^{i}}$ is obtained from the formula for the criterion of the mass

exchange activity K_{ξ}^{i} . The criterion K_{ξ}^{i} is determined by the derived equation

Card 1/3

A New Method of Determining the Coefficients of Mass Transfer

S/170/60/003/02/18/026 B008/B005

(5):
$$\frac{\Delta U_{\text{max}}}{\Delta U_{\text{init}}} \approx \frac{K_{\xi}^{i}}{1 + K_{\xi}^{i}} \text{ erfc} \frac{\frac{x}{R} - 1}{2\sqrt{(Fo_{\theta}^{i})_{\text{max}}}} - \frac{2K_{\xi}^{i}}{(1 + K_{\xi}^{i})^{2}} \text{ erfc} \frac{\frac{x}{R} - 1 + 2(K_{\theta}^{i})^{-\frac{1}{2}}}{2\sqrt{(Fo_{\theta}^{i})_{\text{max}}}}$$

Mu = U and $\Delta U_{\rm init}$ = U - U (K' = criterion of inertia). Special nomograms for the relations between $\Delta \theta_{\rm max}$ and (Fo') max and (Fo') max are worked out for higher values of this criterion. Finally, the specific isothermal mass capacity of the material investigated is computed from the formula c' = $\frac{\Delta'}{a'/c}$. A device in the form of a hollow cylindrical synthetic glass is suggested to carry out the experiments (Fig. 1). The final results for one of the experiments are given which correspond to the diagrams (Figs. 2 and 3). In spite of certain shortcomings, this method has many advantages such as simplicity, simulataneous determination of all coefficients by one single experiment, relatively quick procedure, and small dimensions of the device. The method is suited for engineers and research workers. Vishnevskiy is mentioned in the paper. There are 3 figures and 4 Soviet references.

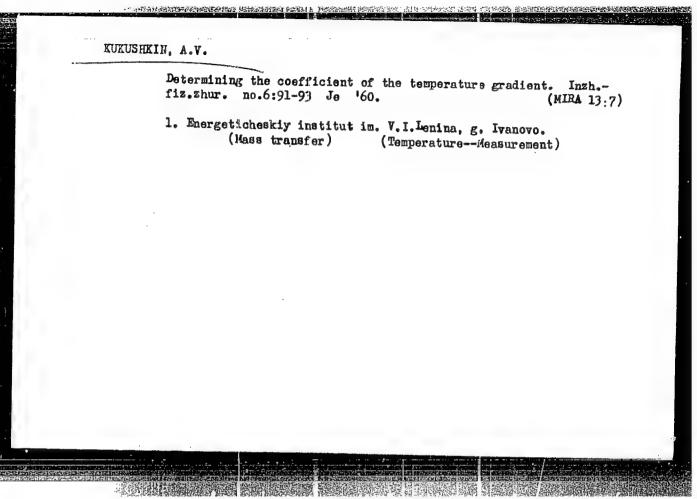
Card 2/3

A New Method of Determining the Coefficients of \$/170/60/003/02/18/026

Mass Transfer B008/B005

ASSOCTATION: Energeticheskiy institut im. V. I. Lenina, g. Ivanovo (Institute of Power Engineering imeni V. I. Lenin, City of Ivanovo)

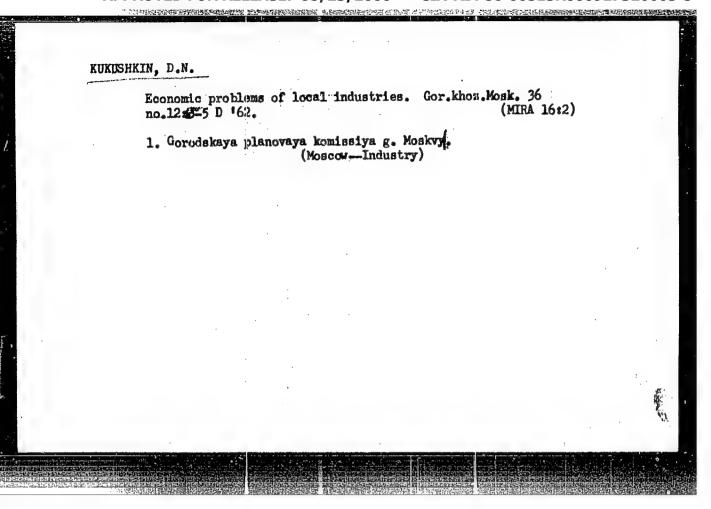
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Science Science Science Fnginee (Engine Colonel Physical pr Moscow, copies p	rinciples of ricket weapons, (Fizicheskiye osm Voyenisdat M-va obor. SSSR, 1965. 463 p. illi printed.	Octor of Technical N. (Doctor of Technical (Candidate of Technical of Technical Sciences, Colonel); Smirnov, A. D. (1) ical Sciences, Engineer- ovy raketnogo oruzhiya) us., biblio. 12,000
FURPOSE AND	rocket, rocket flight, weapon, projected am populant, combustion chamber, engine fuel system of equipment, rocket engine test, jet projected am experiment. This book presents the principles of jet propulation, describes a local principles of jet propulation, describes a	pulition

L 3835-66. AH5025577 and control and guidance systems of various types. It also describes the working principle of rockets of various types and their basic equipment, and the designs of ground equipment and the tests of rocket complexes. It also contains a classification of rocket equipment. The book is intended for officers connected with the manufacture of rocket equipment, and for students of military educational institutions. The contents of the book is based on materials of overt Soviet and foreign publications. TABLE OF CONTENTS (abridged): Introduction — 3 Ch. I. Problems solved by rocket weapons, requirements set for them, and classification of rocket ammunition - 5 Ch. II. General information on jet engines — 24 Ch. III. Rocket fuels — 47 Ch. IV. Combustion chambers — 75 Ch. V. Rocket engine feed systems — 135 Ch. VI. Some problems in the theory of rocket flight. Ch. VII. Rocket control systems — 240 Ch. VIII. Design peculiarities in the structure of various purpose rockets - 323

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Ch. IX. Ch. X. R. Ch. XI.	Ground equipment ocket and rocket Rocket combat u	of various t comple: tes its - 427	purpose rocke	et complexes	- 385	
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KUKUSHKIN, 6 I

Obucheniye i trenirovka motosportsmena (instruction and training of motorcyclists-sportsmen) Moskva, Gos. izdvo
"Fizkul'tura i Sport" 1951. 219 p. illus., diagra.,
tables.

KURUSHRM, C.M.

32-2-55/60

AUTHOR:

None Given

TITLE:

Short Communications (Korotkiye soobshcheniya)

PERIODICAL:

Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 2, pp. 248-250 (USSR)

ABSTRACT:

I. A. Aliyev and E. I. Ibragimov (Institute for Physics and Mathematic: AS Azerbaydzhan SSR, Beku) leveloped a vacuum furnace, which permits the smelting of metals and alloys in quartz crucibles (content 5 ccm) and their casting into vibrating moulds at a temperature up to 900°C and at a pressure of 10⁻⁹ nm.

L. P. Karasev and G. M. Kukushkin (All-Union Scientific Research and Design Institute for Chemical Machine-Building) developed ordinary wire tensioneters for pressure cells. The cell operates up to 300 atm. and consists of a thin-walled cylinder, on the operating elements of which two tensioneters and on the resting part of which two shafts are attached by means of glue. A casing protects the cylinder against mecha-

nical damage.

Card 1/5

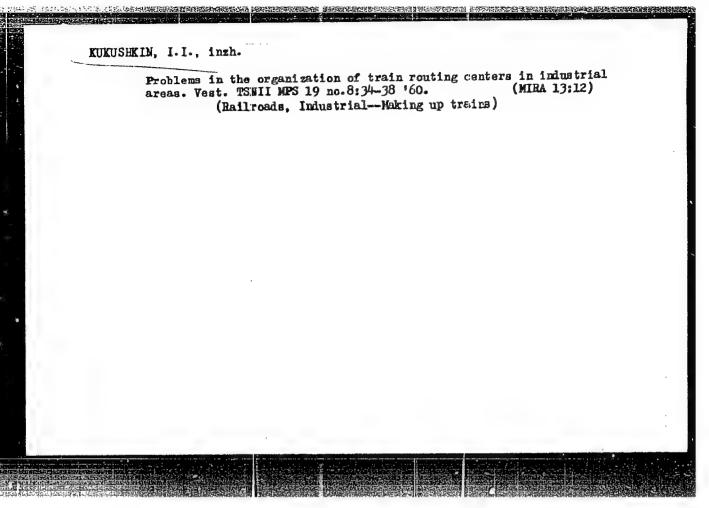
I. P. Anan'in and P. I. Anan'in (Institute of the Physics of Metal,

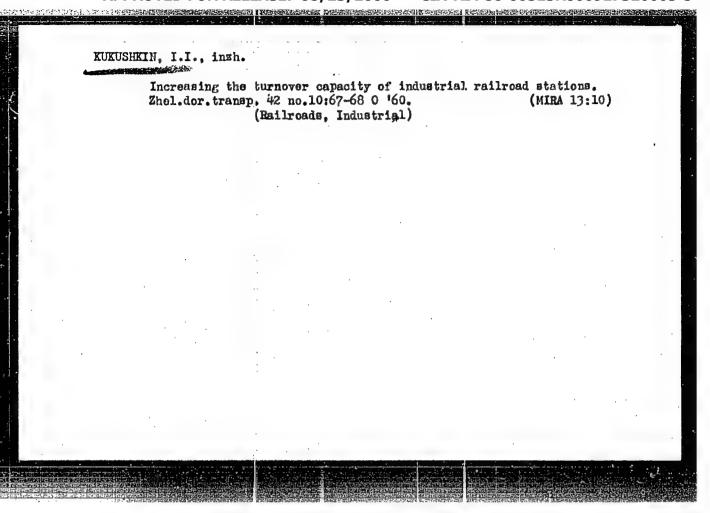
KUKUSHKIN. I.I., inzh.; GOL'HENTUL, B.A., inzh.

Economic efficiency of operating little-used midings ("Economic problems of short-haul freight transportation using railroad midings" [in Polish] by Wiodzimierz Patlikowski. Reviewed y I.I. Kukushkin, B.A. Gol'dentul). Vost, TSNII MPS[17] no.3:62-63 My '58.

(Poland--Railroads--Freight)

(Poland--Railroads--Freight)



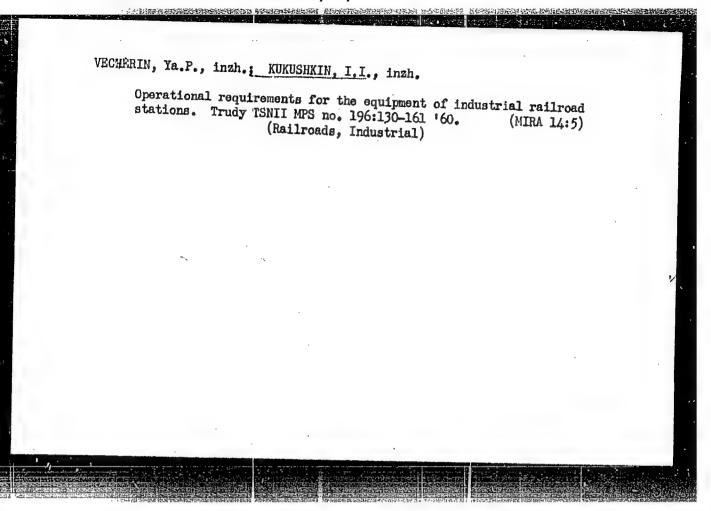


VECHERIN, Ya.P., inzh.; KUKUSHKIN, I.I., inzh.; DLUGACH, B.A., kand.tekhn.nauk

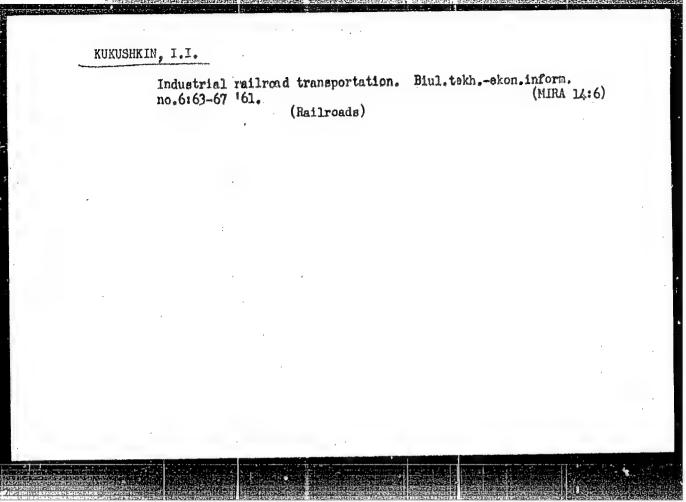
Estimating the equipment requirements of loading and unloading units.

Trudy TSNII MPS no. 196:79-108 '60. (MIRA 14:5)

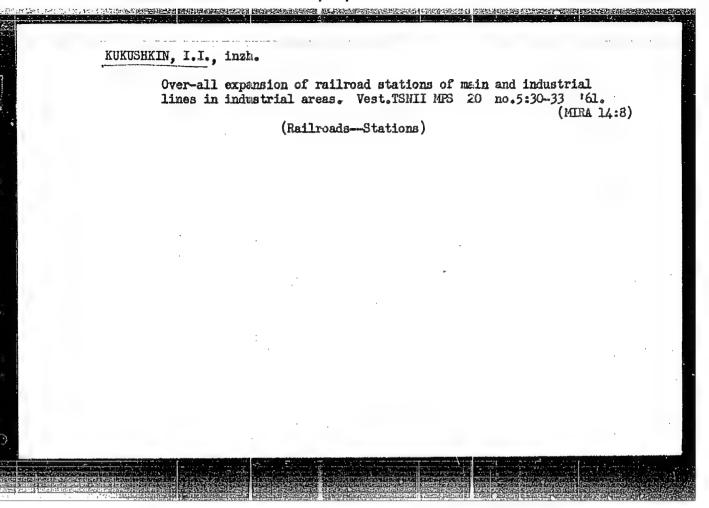
(Loading and unloading)

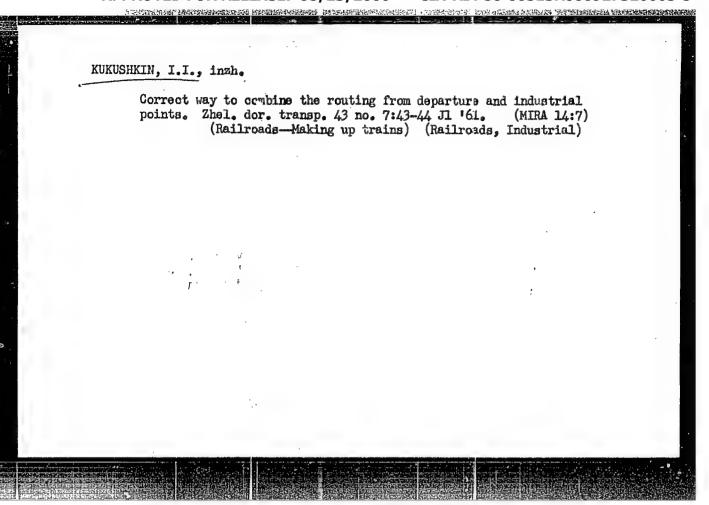


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KUKUSHKIN, I.I., inch...

Complex expansion of the main line and undustrial transportation.

Zhel.dor.transp. 44 no.7:77-80 Jl '62. (MIRA 15:8)

(Railroads--Freight)

GULEV, Yakov Fedorovich; DERIBAS, Andrey Terent'yevich, kand. tekhn.
nauk; DOBROSEL'SKAYA, Antonina Filippovna; DRUZEININ, Konstantin
Fedorovich; KUKUSHKIN, Ivan Ivanovich

[New forms of transportation services for industrial enterprises.]

Novye formy transportnogo obsluzhivaniia promyshlennykh

predpriiatii. Moskva, Transport, 1964. 10lp. (Moscow. Vsesoiuznyi
nauchno-issledovatel'skii institut zheleznodorozhnogo transporta.

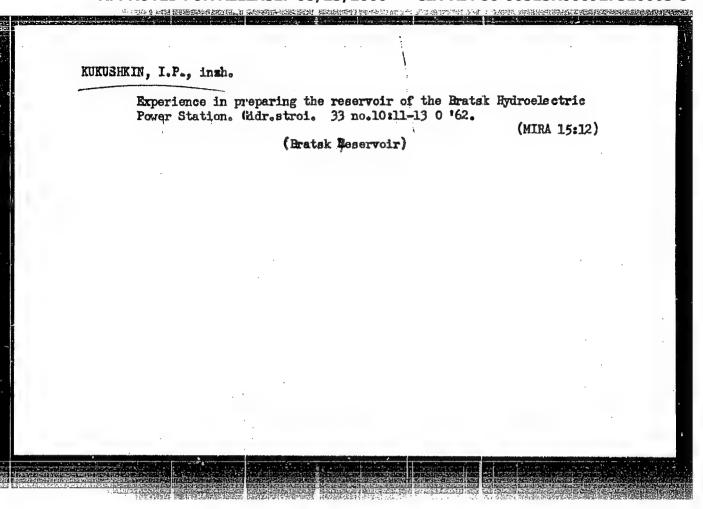
Trudy, no.281). (MIRA 17:9)

ODINTSOV, M.M., doktor geol.-min. nauk, ctv. red.; PAL'SHIN, G.B., kand. geol.-min. nauk, red.; LOGACHEV, N.A., red.; FINNEKER, Ye.V., red.; GRECHISHCHEV, Ye.K., kand. tekhn. nauk, red.; ASTRAKHANTSEV, V.I., red.; VOLOGODSKIY, G.P., red.; KUKUSHKIN, I.P., red.; FEDUROV, I.P., red.; TIZDEL', R.R., red.; SEDOVA, R.G., red.; YERMAKOV, V.F., red.; ASTAF'YEVA, G.A., tekhn. red.; POLYAKOVA, T.V., tekhn. red.

[Bratsk Reservoir; engineering geology of the territory]
Bratskoe vodokhranilishche; inzhenernaia geologiia territorii.
Moskva, Izd-vo AN SSSR, 1963. 274 p. (MIRA 16:12)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut zemnoy kory.

(Bratsk Reservoir region--Engineering geology)



KUKA SHEIN, 1. M.

Kolkhoz imeni Il'icha / The "Il'ich" Collective Fur / Z. Moskva, Ges. izd-vo sel'khoz. lit-ry. / 1953 /. 136 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 12 March 1754.

KUKUSHKIF, I. H.

Folkhoz imeni il'icha [ihe "Il'ich" Collective Farm]. Moskva, Sel'khozgiz, 1953.
152 p.

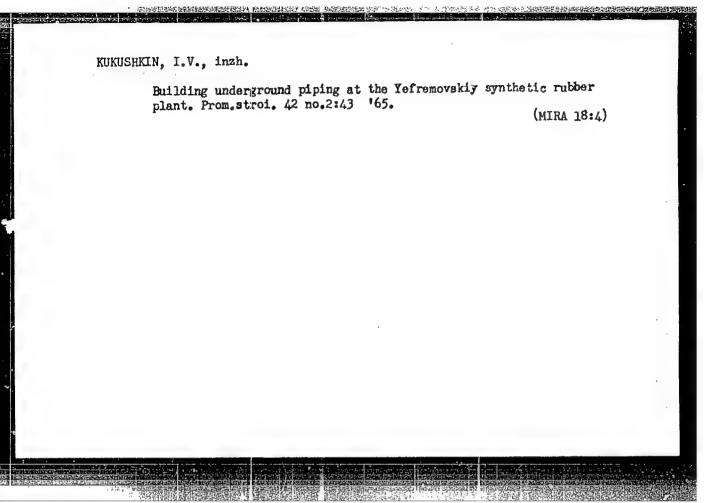
Monthly List of Russian Accessions, Vol. 6 No. 11 February 1954

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VINTER, A.V., akademik; KUKUSHKIN, I.N., inzhener; TRAPEZNIKOV, V.A.;
NIKOLAYEV, A.T., inzhener (Muromtsevo, Vladimirskoy obl.); KUDELIN,
Ya.M. (Muromtsevo, Vladimirskoy obl.); PETROV, I.I., dotsent, kandidat
tekhnicheskikh nauk (Moscow); BADALYANTS, M.G., inzhener; BELICHENKO,
G.M., inzhener; KLAPCHUK, L.D., inzhener; FRANTSUZOV, Ye.M., inzhener;
TAREYEV, B.M., professor, doktor tekhnicheskikh nauk; MAGIDSON, A.O.,
inzhener.

Improving the knowledge of power engineers through correspondence courses. Remarks on B.M.Tareev's and A.O.Magidson's article. Elektrichestvo no.3:76-80 Mr 154. (MLRA 7:4)

1. Energeticheskiy institut im. Krzhizhanovskogo Aksdemii nauk SSSR (for Vinter). 2. Blavnyy energetik Gor'kovskogo avtomobil'nogo zavoda im. Molotova (for Kukushkin). 3. Institut avtomatiki i telemekhaniki Akademii nauk SSSR (for Trapeznikov). 4. Chlen-korrespondent Akademii nauk SSSR (for Trapeznikov). 5. Leninakanges (for Badalyants). 6. Dnepropetrovskiy institut inzhenerov transporta (for Belichenko). 7. Kurskhovskaya gres (for Klapchuk). 8. Orekhove-Zuyevskaya tets (for Frantsusov). 9. Vsesoyuznyy zaochnyy energeticheskiy institut (for Tarejev and Magidson).



APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927320003-5"

KUKUSHKIN, L.I. New semigutomatic machinery for abrasive sharpening and sizing of cutting tools. Forf.prom. 30 no.9:25-26 S *53. (M.RA 6:8) 1. Zavod Ivtorfmash. (Cutting machines)

Tool expenditure standardization. Torf.prom. vol. 30 no.11:21-23 N-D '53. (MIRA 6:11)

1. Zavod Ivtorfmach. (Machine-shop practice)

KUKUSHKIN, L.	
	ing - Machine Tools
Card 1/1	
Author	: Kukushkin, L. I.
Title	: Automatization of Refacing and Adjustment of Cutters
Periodical	: Stan. 1 Instr. Ed. 1, 35-37, Jan/1954
Abstract	: Methods for refacing and adjusting cutters are given together with a general description of the following grinding machines: Three-mendrel grinding machine used for refacing cutters, and a two-mendrel machine used for final sharpening of cutters.
Abstract Institution	with a general description of the following grinding machines: Three-mendrel grinding machine used for refacing cutters, and a
	with a general description of the following grinding machines: Three-mendrel grinding machine used for refacing cutters, and a two-mendrel machine used for final sharpening of cutters.
Institution	with a general description of the following grinding machines: Three-mendrel grinding machine used for refacing cutters, and a two-mendrel machine used for final sharpening of cutters.
Institution	with a general description of the following grinding machines: Three-mendrel grinding machine used for refacing cutters, and a two-mendrel machine used for final sharpening of cutters.
Institution	with a general description of the following grinding machines: Three-mendrel grinding machine used for refacing cutters, and a two-mendrel machine used for final sharpening of cutters.

L. I. KUKUMKIN

SURGICAL EQUIPMENT

"Clips and Instruments for Using Them," by L.I. Kukushkin and P.D. Belyakov, Scientific Research Institute of Experimental Surgical Apparatus and Instruments of the Ministry of Health USSR, Voprosy Neyrokhirurgid, No 3, May-June 1957, pp 55-56.

The ligation of the intracranial vessels in neurosurgical operations presents many well-known difficulties, because the operational field is too small and the material used for ligatures often causes postoperative complications.

Since 1911, the silver clips introduced by Harvey Cushing havebbeen unideerally used. Recently, clips made from tantalum were also invented because they are less irritating to the tissues than those made of silver. However, medical practitioners were never satisfied with the existing clips and clip-holders.

The Scientific Research Institute of Experimental Surgical Apparatus and Instruments of the Ministry of Health USSR, together with the Institute of Neurosurgery of the Academy of Medical Sciences, have devised new kinds of clips, as well as instruments for using them.

The new clips are of two sizes: 4.5 and 7 mm. They are made of silver wire of rectangular cross section. A new set of alip containers was also introduced. These

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are made so as to avoid wedging which, though rare, sometimes occurred with those

The new clips, after having passed clinical tests, are now being produced at the Gor'kiy Medical Plant imeni V.I. Lenin.

Kukushkin, L. I., Chekin, V. F., and Fedorov, S. F.

"Methods for measuring cerebrospinal fluid pressure and for the drainage of the ventricles of the brain." Novye khirurgicheskie apparaty i instrumenty i opyt ikh primeneniya, No. 2, 1962, p. 130

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KALININA, T.V., kand.msd.nauk (Moskva, D-57, ul.Baltiyskiy poselok, 13/48, l-y pod yezd, komn. 22).; KUKUSHKIN, L.I., inzh.

Using an apparatus for suturing nerves. Vest.khir. 81 no.11:122-126 N '58. (MIRA 12:3)

l. Iz Nauchno-issledovatel'skogo instituta eksperimental'noy khirurgicheskoy apparatury i instrumentov (dir. - M.G.Anan'yev).

(NERVES-SURGERY)

KUKUSHKIN, L.I.; FETHOVA, N.F., kand.med.nauk

Universal vasoneurographic apparatus. Voen.-med.zhur. no.7:
2?-32 J1 '59. (MIRA 12:11)

(SUTURES)

(HERVOUS SYSTEM surgery)

(BLOOD VESSELS eurgery)

Apparatus for applying an epineural suture by mechanical means. Med.prom. 13 no.3:44-46 Mr *59. (MIRA 12:5)

. Mauchno-issledovatel*skiy institut eksperimental*noy ichirurgicheskoy apparatury i instrumentov. (SUTURES) (SURGICAL INSTRUMENTS AND APPARATUS)

LI TIN-MIN' [Li T'ing-min' (MOSKVA; 77] Baltiyaki 30, 225,
Obshchezhitiye aspirantov ANN SSSR); MUKUSHKII, L.I.;
POTEKHINA, L.A.

Apparatus for applying a caval-pulmonary anastomosis (CPA).
Grud. khir. 2 no.4:121-124, Jl.Ag '60. (MIRA 15:6)

1. Iz Institute grudnoy khirurgii AMN SSSR (dir. - prof.
S.A. Koleenikov) Nauchno-issledovatel'skogo instituta eksperimental'noy khirurgicheskoy apparatury i instrumentov (dir.

M.G. Anan'yev).

(SURGICAL INSTRUMENTS AND APPARATUS)

(BLOOD VESSEIS-SURGERY)

PETROVA, N.P.; KUKUSHKIN, L.L.; POTEKHINA, L.A.; BOGOMOLOVA, O.R.

Apparatus for suturing the large blood vessels and its use. Trudy NIIEKHAI no.5:45-48 '61. (MIRA 15:8)

1. Nauchno-issledovatel'skiy institut eksperimental'noy khirurgicheskoy apparatury i instrumentov. (SUTURES) (BLOOD VESSELS-SURGERY)

KUKUSHKIN, L.I.; BRYK, V.Ye.

Apparatus for suturing the dura mater. Trudy NIIEKHAI no.5:105-109 '61. (MIRA 15:8)

1. Iz Nauchno-issledovatel'skogo instituta eksperimental'noy khirurgicheskoy apparatury i instrumentov i Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta im. M.F. Vladimirskogo.

(SUTUTES) (DURA MATER-SURGERY)

KUKUSHKIN, L.I.; POTEKHINA, L.A.

Apparatus for suturing large blood vessels. Med. prom. 15 no.7:53-54 Jl '61. (MIRA 15:6)

l. Nauchno-issledovatel'skiy institut eksperimental'noy khirurgicheskoy apparatury i instrumentov.

(BLOOD VESSELS—SURGERY)

(SUTURES)

ANTOSHINA, N.V.; ASTAF'YEV, G.V.; BABKIN, S.I.; BELAVIN. N.F.;

BELEN'KIY, V.A.; BEREZIN, I.P.; BOBRC. B.S.;

VOLKOV, A.M.; CRITSMAN, Yu.Ya.; KUKUSHKIN, L.I.; PERLFELKIN,

V.P.; PETROVA, N.P.; GESELEVICH, A.K., red.; DEKHTYAR', Ye.G.,

red.

[New surgical apparatus and instruments; a practical manual for physicians, students of senior courses at medical institutes and surgical nurses] Novye khirurgicheskie apparaty i instrumenty; prakticheskoe rukovodstvo dlia vrachei, studentov starshikh kursov meditsinskikh institutov i operatsionnykh sester. Moskva, Meditsina, 1964. 253 p.

(MIRA 18:3)

AUTHORS: Kukushkin, L. S., Ratner, A. M. 57-2-22/32 TITLE: On the Problem of the Energy Resolution of Scintillation Counters. I. (K voprosu ob energeticheskom razreshenii staintillyatsionnykh schetchikov. I.) PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 2, pp.345-350 ABSTRACT: In the recording of a monoenergetic beam of Y-quanta the impulse-distribution at the output of the scintillation counter firms a curve whose shape depends 1) on the conditions of light-collecting of the scintillator, 2) on the effects connected with the Compton quantum-scattering and 3) on the fluctuation-processes in the photomultiplier. These causes of deviation are here investigated jointly for the case of the scintillators most used - the cylindrical NaJ(T1)-crystals - in combination with various types of photomultipliers. For determining the influence of the dimensions of the scintillator upon their resolving power a calculation of three crystals is Card 1/2 performed here: Nr 1 - r = 20 mm, h = 60 mm, Nr 2 - r = 30 mm,

On the Problem of the Energy Resolution of Scintillation Counters. I.

h = 30 mm, Nr 3 - r = 15 mm, h = 15 mm. Three cases concerning different conditions between the indices of refraction of the expectal, the intermediate layer and the class of the photomolyperiod photomolyperiod contact between crystal and photomultices of an ideal optical contact between crystal and photomultices plier, 2) no = 1,2, this is the case of a photomultiplier with a photocathode (applied onto glass). A Vaseline oil with here. 3) no = 1,77 - this is the case which corresponds to a photomultiplier with an internal photocathode. The calculations show that the deviation caused by the light-outlet is different from the Gaussian curve and largely contributes to authors' attention to the importance of the problems treated and 6 non-Slavic references.

ASSOCIATION: SUBMITTED: AVAILABLE: Khar'kov Branch IREA (Khar'kovskiy filial IREA) Ind Chem Recktwov Library of Congress

Card 2/2

1. Scintillation counters-Energy resolution 2. Crystals-Refraction

AUTHORS: Ratner, A. M., Kukushkin, L. S. 57-28-5-35/36 TITLE: On the Problem of Energy Resolution of Scintillation (K voprosu ob energeticheskom razreshenii stsintillyatsionnykh schetchikov. II) PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 5, pp. 1121-1125 (USSR) ABSTRACT: The present paper is a continuation of the work conducted by the authors (Reference 1) on the light accumulation in scintillators. It is devoted to the investigation of the influence of the Compton distribution of J -quanta in crystals and the FEU (photoelectronic multiplier) spread on the energy resolution in scintillation counters. Here, the case of a collimated 7 beam with an energy of 0.661 MeV (Cs 137), which was directed along the axis of cylindrical crystals, was investigated. The size of the crystals NaJ(T1) was: 1) r = 20 mm, h = 60 mm; 2) r = h == 30 mm; 3) r = h = 15 mm. Just as in reference 1 the Card 1/3 first and the third crystal were computed for three values

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of the relative refraction index at the boundary between the crystal and FEU (photoelectronic multiplier) $n_{21} = 1$; 1,2, 1.77 and the second crystal only for $n_{21} = 1.2$. An accurate solution of the problem is only possible by com plicated computations. Therefore an approximate computation was employed, the so-called Monte carlo method. As a control the distribution curves, which were determined for two beams each consisting of 200 & -quanta, were compared. It appeared, that the results for all investigated crystals agree with sufficient accuracy. The numerical results concerning the distribution curves are compiled in a table. As a comparison, data on the light accumulation are given (Reference 1). The table shows, that the Compton dispersion reduces the spread, in particular in small crystals. In the case, when the dimensions of the crystal are great in comparison to the length of free passage of the Y -quanta, the flashes can be regarded as points. The distri-bution curves of such a crystal can be constructed easily and immediately by means of the same intensity curves given

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in reference 1 without employing the Monte Carlo method. The better resolution of the beam collimated in the direction of the axis can be explained by the fact, that the flashes are produced primarily in the vicinity of the crystal axis. The spread of light emission, however, is in this range somewhat less than in the entire circumference of the crystal. It is obvious, that in case of a not collispread must be between the spread of the curves:

1 dv and the curves in figure 1. The authors are indeb-

ted to G. Ye. Zil'berman for his guidance. There are 3 figures, 1 table and 6 references, 1 of which is Soviet.

SUBMITTED:

June 8, 1957

1. Scintillation counters--Design

Card 3/3

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2/508/60/000/000/014/018 E039/E535

Ratner A.M. and Kukushkin L.S.

TITLE:

On the question of the energy resolution of scintillation counters

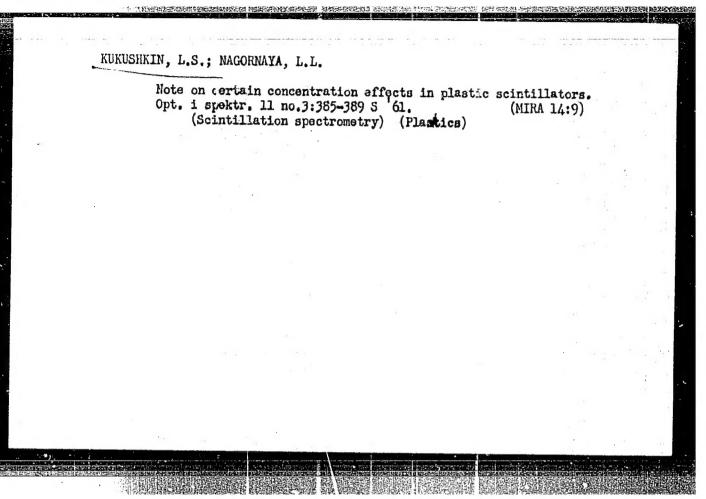
SOURCE:

III. Konference o monokrystalech. Prague, Výzkumný ústav pro minerály, 1960, 192-197

TEXT: The nonuniformity of light yield in the volume of a scintillator is one of the parameters which determines the energy resolution of scintillation counters. This paper is a continuation of previously published work and is devoted to an examination of the effect of Compton scattering of γ-quanta in crystals and the energy resolution of scintillation counters. The case of a collimated beam of γ -rays of energy 0.661 MeV (Cs. 37) directed along the axis of a cylindrical crystal of NaI(T1) is investigated. Crystal sizes are: no.1) r = 20 mm, h = 60 mm; no.2) r = h = 30 mm and no.3) r = h = 15 mm. Crystals no.1 and no.3 are examined for three values of refractive index, 1; 1.2; 1.77 and no.2 only for the refractive index 1.2. An accurate estimate of the energy resolution and distribution entails a cumbersome calculation and

On the question of the energy ... Z/508/60/000/000/014/018 E039/E533

therefore the Monte-Carlo method is used. It is shown that good agreement is obtained between the calculated and experimental results. The effect of Compton scattering is to reduce the spread and lower the effect of nonuniformity of the light yield, particularly in case of the smaller crystals. If the upper part of the crystal is cut into the form of a truncated cone without decreasing the volume there is a significant increase in light yield and a decrease in the spread due to improved reflection from the sides of the crystal. For good efficiency the ratio of the height to the radius should not exceed 0.65. There are 3 figures.



Theory of optical transitions in local centers. Fiz. tver. tela
5 no.8:2170-2177 Ag '63. (MIRA 16:9)

1. Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR,
Khar'kov. (Semiconductors) (Quantum theory)